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UNITED STATES GOVERNMENT

# Memorandum

CCD-M72- 217

TO : Chief, Program Coordination Staff, OC

DATE: 19 May 1972

FROM : Chief, Covert Communications Division, OC

SUBJECT: Request for Supplemental Construction Funds  
to Update and Rehabilitate the Covert  
Communications Laboratory's Anechoic Chamber

25X1A

1. In the late 1950's when microwave technology was the current technical trend, an anechoic chamber was constructed at CCD's [REDACTED] to evaluate antennas operating in this frequency range. The chamber was originally specified to have a 40 db reflectivity over a frequency range of 250 MHz to 40 GHz. Although a pioneer in its field, the chamber never quite met this somewhat optimistic specification completely. Today, its performance is so poor that technical data referenced to chamber performance is questionable below 10 GHz and is not usable below approximately 3 GHz.

2. Coupled to this situation is the fact that the "microwave trend" did not materialize to any major degree. Today's requirements are for antennas designed to operate predominately at HF, VHF and UHF. In fact, the bulk of our present workload is in the 150 to 500 MHz frequency range and this appears to be the trend for the foreseeable future.

3. Scaling at these frequencies, in order to allow testing at microwave frequencies, has proved to be impractical or impossible because of the antennas' unique design and their unusual application requirements. Some areas where this is most apparent are body worn antennas, miniaturized antennas and antennas designed for concealment applications.

4. Alternatively, we have investigated exploiting industry antenna skills to meet the peculiar development needs required for agent type antennas. Unfortunately, only very marginal results have been obtained. Further, antenna evaluations performed by industry are costly -- averaging about \$10,000 each -- on those occasions where we have had to resort to this tack. Consequently, it is a case of doing it ourselves to meet the peculiar requirements of agent antenna needs.



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5. This leaves us no choice but to update and rehabilitate the technical characteristics of the existant anechoic chamber. Fortunately, considerable improvements in chamber design and absorber materials have become available since the "pioneer days" when the chamber was constructed. These materials are more durable and provide better performance characteristics at lower frequencies and over wider frequency bands. The remodeled facilities should perform well from 150 MHz to approximately 30 GHz.

6. The development and evaluation capability of the CCD Laboratory must be maintained through the availability of well equipped facilities, to assure that the best antenna technology is provided for use with the sophisticated agent communications equipment that is so common in today's technology. Also, there is a need for a facility of this type by other components of the Agency. Frequent users, before the chamber performance became degraded, were OC-SPD, OC-CS, DDS&T/OEL and DDP/TSD. These components remain potential users because they do not possess suitable facilities. Unquestionably, once the chamber's performance is restored, inquiries regarding its availability for use is a certainty.

7. A side benefit to rehabilitating this chamber is that it can be used in applications other than antenna testing. Complete communications systems, especially at microwave and infrared frequencies can easily be evaluated in the chamber's environment. Also, the acoustical properties of the chamber provide the aural quiet needed for accurate sound-level measurements. At times there is a need for a very large RF screen room for the purpose of evaluating RF systems and components which must be separated or isolated from each other during test. The anechoic area of the facility provides a 50-foot room; when combined with the two end rooms an RF screened enclosure of 70 feet in length is available.

8. The anechoic chamber's existing test rooms and RF shielding enclosures were designed specifically to house an indoor antenna test range. This represented a major capital expenditure for physical plant. To convert the area to accommodate another type of activity would be extremely costly. The [REDACTED] 25X1A [REDACTED] Engineering Office estimates the value of the existing chamber at \$205,000. The construction costs to update

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the chamber are estimated at the \$80,000 funding level. This cost is considered reasonable considering the capital asset that the chamber represents. Equated from the evaluation standpoint alone, the funding level represents the equivalent cost of eight evaluations by industry sources.

9. For the significant reasons stated above, it is requested that your office arrange to program supplemental construction funding for the purpose of construction updating and rehabilitating the anechoic chamber since our budget forecast is routinely dedicated to R/D&E and its technical support exclusive of physical plant. Ideally, we recommend this request be considered as an item for expenditure of FY-72 year-end supplemental funds should they become available to the Office of Communications. In the event this does not occur, this memorandum should be considered as a valid priority item for supplemental construction cost funding during FY-73.

10. We will appreciate being kept advised of any action you take relating to this request. If you require additional information regarding this matter, you may contact [REDACTED] 25X1A  
[REDACTED]. At Headquarters, you may contact Mr. [REDACTED], should any questions arise.

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## ROUTING AND RECORD SHEET

SUBJECT: (Optional)

Request for Supplemental Construction Funds ...

FROM: OC-CCD EXTENSION [REDACTED] NO. CCD-M72- 217 25X1A  
 DATE 19 May 1972

TO: (Officer designation, room number, and building) DATE  
 RECEIVED FORWARDER OFFICER'S INITIALS COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)

1.	Chief, Program Coordination	Staff, OC	22 MAY 1972	DWB	<i>Turk</i>
2.				<i>A.P.M.</i>	<i>Attic</i>
3.				<i>R.L.F.</i>	<i>Red</i>
4.					ILLEGIB
5.					1. This was unfunded for Fy 73, 74, 75.
6.					2. Reprogram 73 or 74
7.					3. Program for Fy 1975.
8.					
9.					
10.					
11.					
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